PUBLIC HEALTH BRIEFING

Rhode Island Department of Health
Patricia A. Nolan, MD, MPH, Director of Health

Edited by John P. Fulton, PhD

Cancer Prevalence Estimates, Rhode Island 1998

John P. Fulton, PhD

Cancer prevalence statistics were estimated by race, sex, and age for Rhode Island using conventional methods suggested and supported by the National Cancer Institute (NCI).

BACKGROUND

Cancer prevalence in Rhode Island may be estimated by applying prevalence proportions computed from longitudinal cancer data series to the population of Rhode Island. Two series are used as standards in the United States, one from the Connecticut Tumor Registry, which began collecting cancer case reports in 1935, and one from the NCI's **Surveillance, Epidemiology, and End Results** (SEER) program, which began collecting cancer case reports in 1973. [1] The SEER series incorporates data from Connecticut (from 1973 onward) and other selected states and metropolitan areas throughout the United States, covering 10% of the United States population in its early years of operation, and about 14% today. [2] The Connecticut series allows the estimation of prevalent cases diagnosed up to 57 years ago, while the SEER series allows the estimation of cases diagnosed up to 20 years ago. [1] This is an important distinction to make, because many prevalent cancer cases in Rhode Island and elsewhere in the United States were diagnosed more than 20 years ago.

Of the two series, prevalence proportions from Connecticut are the most appropriate for constructing Rhode Island prevalence estimates, because the two states are contiguous and share similar demographic and industrial histories. However, prevalence proportions from Connecticut are not available by race. SEER data, from which separate prevalence proportions have been computed for blacks and whites, must be used for this purpose.

DEFINITION

Following the NCI's convention, two prevalence measures considered appropriate for cancer are complete prevalence and limited duration prevalence:

> " Complete Prevalence represents the proportion of people alive on a certain day who previously had a diagnosis of the disease, regardless of how long ago the diagnosis was, or if the patient is still under treatment or is "cured". Justification of this use of the term prevalence may be because treatment for the disease (e.g., surgery or radiation) may lead to long-term or permanent mental and physical impairment, as well as changes in one's socioeconomic and cultural status. However, the definition may also be used simply because of the difficulty of determining when a person is cured or when, using population-based data, treatment ends. Limited Duration Prevalence is estimated using the same method as complete prevalence, but is derived from a registry of shorter duration."[1]

The data series available from the Connecticut Tumor Registry is sufficient to estimate complete prevalence, while the data series presently available from the SEER system may only be used to estimate 20-year prevalence, the prevalence of cancer cases diagnosed within 20 years of the reference date chosen for the prevalence estimate. [1]

METHODS

Cancer prevalence proportions by anatomical site, sex, and age derived from Connecticut data and made available for public use by the NCI were multiplied by 1998 Rhode Island population projections by sex and age to produce complete prevalence estimates by anatomical site, sex, and age for Rhode Island, 1998. Only those anatomical sites for which a prevalence of 500 or more were estimated are listed in the tables, below. Additional estimates may be found by visiting the web site of the Rhode Island Cancer Registry. [3]

Cancer prevalence proportions by race, sex, and age derived from SEER data by the NCI were multiplied by 1998 Rhode Island population projections by race, sex, and age to produce "20-year prevalence" estimates by race, sex, and age for Rhode Island, 1998. The race categories available for these calculations were : all races, whites, and blacks. Anatomical site-specific estimates were not produced by race, because some of these estimates are subject to sufficient random error to render them unreliable.

Population projections for 1998 were obtained from the NCI's SEER System website, to be consistent with other cancer registry statistics in the United States. [4]

RESULTS

Based on Connecticut Prevalence Proportions

In 1998, 37,612 Rhode Islanders were estimated to have had a diagnosis of cancer sometime in the previous 57 years. Of these, 15,490 (41%) were males, and 22,122 (59%) were

Estimated prevalence of first invasive primary malignancies diagnosed 1942-1998, Rhode Island males, 1998
(Based on sex-age-specific prevalence proportions calculated for the State of Connecticut)

(All races)	Age in 1998									
Site of invasive primary malignancy	**All**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80+**
All Sites	15490	62	99	265	546	955	1516	3354	5650	3044
Major Sites (more than 500 prevalent cases)										
Colon-rectum	2323	0	0	3	20	61	168	481	953	637
Lung and Bronchus	744	0	0	1	6	29	90	215	295	108
Melanoma	989	0	2	15	58	148	165	227	263	112
Prostate	4984	0	0	0	1	22	263	1144	2321	1233
Testis	523	4	3	49	149	154	79	47	29	9
Bladder	1730	0	1	4	17	66	164	390	694	395
Non-Hodgkins Lymphoma	614	2	12	24	42	73	99	127	160	74

Estimated prevalence of first invasive primary malignancies diagnosed 1942-1998, Rhode Island females, 1998
(Based on sex-age-specific prevalence proportions calculated for the State of Connecticut)

(All races)	Age in 1998									
Site of invasive primary malignancy	**All**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80+**
All Sites	22122	50	115	269	765	1966	2897	4236	6690	5136
Major Sites (more than 500 prevalent cases)										
Colon-rectum	2664	0	1	3	16	67	158	393	918	1108
Lung and Bronchus	766	0	0	2	8	36	101	201	288	132
Melanoma	1071	0	4	25	106	198	186	202	221	127
Breast	8922	0	0	12	156	820	1353	1858	2747	1976
Bladder	679	0	0	1	7	21	60	139	242	210
Cervix	837	0	1	14	83	154	143	133	180	130
Corpus and Uterus NO	2355	0	0	1	13	96	244	481	888	632
Ovary	774	1	6	25	50	104	124	151	196	118
Thyroid	670	0	4	31	85	149	136	109	107	48
Non-Hodgkins Lymphoma	663	1	6	12	28	61	88	124	213	129

Estimated prevalence of first invasive primary malignancies diagnosed 1979-1998, Rhode Island males, 1998
(Based on sex-age-specific prevalence proportions calculated for the SEER System)

(All invasive primary malignancies)	Age in 1998									
Race	**All**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80+**
All races	13565	60	101	191	466	798	1291	2841	5170	2647
Whites	13377	54	97	190	472	781	1245	2785	5114	2639
Blacks	340	3	5	7	13	27	47	89	117	33

Estimated prevalence of first invasive primary malignancies diagnosed 1979-1998, Rhode Island females, 1998
(Based on sex-age-specific prevalence proportions calculated for the SEER System)

(All invasive primary malignancies)	Age in 1998									
Race	**All**	**0-9**	**10-19**	**20-29**	**30-39**	**40-49**	**50-59**	**60-69**	**70-79**	**80+**
All races	16400	47	92	224	692	1662	2314	3089	4788	3492
Whites	16463	43	88	221	682	1612	2281	3106	4878	3553
Blacks	343	3	5	8	23	57	69	81	70	28

females. Cancer prevalence increases with age, peaking in the 70-79 year age group for both males and females. Less than one percent of the "lifetime prevalent cases" (326 of 37,612) were under age 20 in 1998.

Among men, more than 500 had been diagnosed with cancer in each of seven anatomical sites. Among them were the four sites that regularly yield the highest number of invasive incident cases among men: colon-rectum, lung and bronchus, prostate, and bladder. These four sites accounted for 63% of all estimated prevalent cases among Rhode Island men in 1998.

Among women, more than 500 had been diagnosed with cancer in each of ten anatomical sites. Among them were the four sites that yield the highest number of invasive incident cases among women: colon-rectum, lung and bronchus, breast, and bladder. These four sites accounted for 59% of all estimated prevalent cases among Rhode Island women in 1998.

Based on SEER Prevalence Proportions

In 1998, 29,965 Rhode Islanders were estimated to have had a diagnosis of cancer sometime in the previous 20 years. Of these, 13,565 (45%) were males, and 16,400 (55%) were females. Cancer prevalence increased with age, peaking in the 70-79 year age group for both males and females. One percent of the "20-year prevalent cases" (300 of 29,965) were under age 20 in 1998.

In 1998, 683 black Rhode Islanders were estimated to have had a diagnosis of cancer sometime in the previous 20 years. Of these, 340 (50%) were males, and 343 (50%) were females. Cancer prevalence increased with age, peaking earlier among women (60-69 years of age) than among men (70-79 years of age). About 2% of the prevalent cases (16 of 683) were under age 20 in 1998.

Discussion

In 1998 about 4% of all Rhode Islanders had been diagnosed with cancer sometime in the past. Many of these people undoubtedly did not have active cancer. Over 7,000, for example, had been diagnosed more than 20 years previously.

Complete prevalence is not a measure of lifetime risk, and should not be interpreted as such. In Rhode Island, the lifetime risk of being diagnosed with invasive cancer is roughly 40%, an order of magnitude larger than the complete prevalence estimated for 1998.

The prevalence of cancer is a function of demographics, cancer incidence, and cancer mortality. Prevalence increases as a population ages and cancer treatments improve, and decreases as cancer prevention efforts improve. Presently, all these forces are active in the state. The Rhode Island population is aging, and new cancer control efforts (screening and treatment) are reducing cancer mortality. Anti-smoking efforts have stemmed the longstanding lung cancer epidemic among adult males, and the use of colonoscopy appears to be lowering the incidence of colorectal cancers (by facilitating the removal of precancerous polyps). The interaction of these opposing forces complicates the projection of long-term trends in cancer prevalence. In the short term, however, cancer prevalence will probably increase, given the sure aging of the population, steady improvements in cancer therapy, and a generally upward trend in longevity.

References

1. National Cancer Institute. Prevalence. NCI, Statistical Applications Branch. 2001. <http://www. dccps.ims.nci.nih.gov/SRAB/Prevalence>
2. Ries LAG, Eisner MP, Kosary CL, et al. (eds). *SEER Cancer Statistics Review, 1973-1997.* National Cancer Institute. Bethesda, MD, 2000.
3. <http://www.healthri.org/cancer/canrpt00.htm>
4. National Cancer Institute. SEER System. Rhode Island. <http://www-seer.ims.nci.nih.gov/USPops >

John P. Fulton, PhD, is Associate Director, Division of Disease Prevention and Control, Rhode Island Department of Health.